



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/985,853 | 11/06/2001 | Kazunori Ozawa | Q67063 | 4465 |

7590 09/22/2004
SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

SKED, MATTHEW J

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2655

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/985,853

Applicant(s)

OZAWA, KAZUNORI

Examiner

Matthew J Sked

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/28/02 and 1/8/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 01/08/04 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered. The JPO references on the IDS of 01/08/04 were not considered.

Claim Objections

2. Claim 6 is objected to because of the following informalities: on line 28 "lease" should be changed to -least--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase, "wherein the predetermined conditions comprises a mode condition that the mode of the reproduction speech signal is judged as a predetermined mode **by the mode-**

judging circuit, the excitation signal calculating circuit (emphasis supplied), so that the smoothing circuit and the synthesis filter circuit operate in only the case where the mode condition is met", is unclear as whether the applicant is claiming that the mode-judging circuit and the excitation signal calculating circuit are the same circuit or if the excitation signal calculating circuit operates only when the mode condition is met. For the purpose of prosecution the sentence will be taken to mean that the excitation signal calculating circuit, smoothing circuit and synthesis filter operate only in the case where the mode condition is met, as laid out in the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehara (EP 1024477A1) in view of Kroon et al. (U.S. Pat 5,732,389).

7. As per claims 1 and 8, Ehara teaches a speech decoder for decoding a coded speech signal into a reproduction speech signal and for reproducing a speech signal by the use of the reproduction speech signal (post-processing), including:

Art Unit: 2655

a spectral parameter calculating unit for calculating spectral parameters based on the reproduction speech signal (FFT processing section, Fig. 7, element 704);

a smoothing unit responsive to the spectral parameters and for smoothing in-time at least one spectral parameters (amplitude smoothing section smoothes the spectral amplitude, col. 21, lines 15-21); and

post-processing section operates in compliance with only predetermined conditions (modes, col. 20, lines 27-29).

Ehara does not teach an excitation signal calculating circuit for calculating the excitation signal and a synthesis filter for synthesizing the excitation signal.

Kroon teaches a speech decoder with a post-processing section that includes an excitation signal calculation unit that is responsive to the reproduction speech signal and the spectral parameters (inverse filter synthesized speech to obtain residual signal, col. 29, lines 45-46) and a synthesis filter for synthesizing the excitation signal (col. 29, lines 47-50).

It would have been obvious to one of ordinary skill at the time of invention to modify the system of Ehara to include an excitation signal calculating circuit for calculating the excitation signal and a synthesis filter for synthesizing the excitation signal as taught by Kroon because it would allow the speech to be re-synthesized into more naturally sounding speech.

Ehara and Kroon do not teach the spectral parameter unit, the excitation signal calculating unit, the smoothing unit and the synthesis filter to be circuits.

However, the examiner takes Official Notice that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Ehara and Kroon to have the spectral parameter unit, the excitation signal calculating unit, the smoothing unit and the synthesis filter to be circuits because it is well-known that signal processing can be done in both hardware and software environments, that perform equally well.

8. Regarding claims 2 and 9, Ehara does not teach the excitation calculation unit to carry out inverse-filtering for the reproduction speech signal by the use of spectral parameters to calculate the excitation signal.

Kroon teaches the excitation calculation unit to carry out inverse-filtering for the reproduction speech signal by the use of spectral parameters to calculate the excitation signal (synthesized speech is inverse filtered, col. 29, lines 45-46).

It would have been obvious to one of ordinary skill in the art to carry out inverse-filtering for the reproduction speech signal by the use of spectral parameters to calculate the excitation signal as taught by Kroon because it would enhance the formant regions in the reconstructed speech and overcome energy scaling problems.

9. As per claim 3 and 10, Ehara teaches a mode-judging unit for judging the mode of the reproduction signal by extracting feature quantities from the reproduction speech signal (mode selection switch calculates mode from previous mode selector and decoded signal, col. 21, lines 3-9) and the remaining sections only operate when a certain condition is met (switches in smoothing section when decoded signal is noise, this would also suggest the excitation

Art Unit: 2655

generating and smoothing sections of the combined system of Ehara and Kroon would be switched in as well, col. 21, lines 9-14).

10. As per claims 4 and 11, Ehara teaches the predetermined mode to be silence (noise implies no speech, col. 8, lines 28-29).

11. Regarding claim 5 and 12, Ehara teaches the predetermined mode to be unvoiced sound (two types of modes, voiced and unvoiced speech, col. 8, lines 25-29).

12. Claims 6, 7, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kroon in view of Ehara.

13. As per claims 6 and 13, Kroon teaches a speech decoder for decoding a coded speech signal into a reproduction speech signal and for reproducing a speech signal by the use of the reproduction speech signal, including:

an excitation signal calculating unit for calculating an excitation signal on the basis of the reproduction speech signal (inverse filter synthesized speech to obtain residual signal, col. 29, lines 45-46);

a pitch-prediction circuit, which calculates the pitch from the excitation signal (pitch delay computed from residual signal, col. 30, lines 2-5);

a gain calculating unit that calculates the gain of the signal from the excitation signal using a predicted pitch delay (compute gain from residual signal, col. 30, lines 2-5 and lines 30-33);

produces a proper excitation signal from the gain, pitch and the residual signal (residual signal filtered by pitch post-filter which is dependent upon the gain and the pitch, col. 29, lines 47-50 and eq. 77); and

a synthesis filter constructed from the spectral parameters and reproduces the speech signal by synthesizing the proper excitation signal (new residual signal filtered by synthesis filter, col. 29, lines 47-50).

Kroon does not teach a smoothing unit responsive to the spectral parameters and the gain for smoothing the spectral parameters

Ehara teaches a smoothing unit responsive to the spectral parameters and the gain for smoothing the spectral parameters (smoothes the spectral amplitude calculated from the signal from the synthesis filter and hence would be responsive to the changes in the spectral parameters and the gain, col. 21, lines 15-21).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Kroon to have a smoothing unit as taught by Ehara because Ehara teaches that it reduces the discontinuity in time of the spectral amplitude caused by the coding distortion (col. 21, lines 29-31).

Kroon does not teach calculating a pitch prediction signal through the use of the pitch period to further calculate a residual signal by subtracting the pitch prediction signal from the excitation signal.

Ehara teaches calculating a pitch prediction signal through the use of the pitch period (generate an adaptive code vector based on the pitch period, col. 8, lines 52-56) and suggests calculating the residual signal in the decoder by subtracting the pitch prediction signal from the excitation signal (random code vector and adaptive code vector, col. 9, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Kroon to calculate the pitch prediction signal through the use of the pitch period to further calculate a residual signal by subtracting the pitch prediction signal from the excitation signal as taught by Ehara because since the total excitation signal is the sum of the pitch prediction signal and the excitation signal the residual signal would simply be recovered from these signals.

Ehara does not teach the spectral parameter unit, the excitation signal calculating unit, the smoothing unit and the synthesis filter to be circuits.

However, the examiner takes Official Notice that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Ehara to have the spectral parameter unit, the excitation signal calculating unit, the smoothing unit and the synthesis filter to be circuits because it is well-known that signal processing can be done in both hardware and software environments.

Regarding claims 7 and 14, Kroon teaches the excitation calculation unit to carry out inverse-filtering for the reproduction speech signal by the use of spectral parameters to calculate the excitation signal (synthesized speech is inverse filtered, col. 29, lines 45-46).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hayata (U.S. Pat. 5,787,388), Villette et al. (U.S. Pat. 6,526,376), Gao (U.S. Pat. 6,556,966), and Jarvinen et al. (U.S. Pat. 5,946,651)

Art Unit: 2655

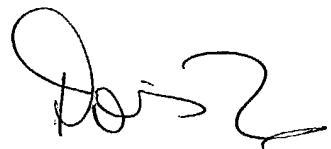
teach methods for post-processing a decoder for better sound quality in the synthesized speech.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Sked whose telephone number is (703) 305-8663. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703) 306-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MS
08/31/04



DORIS H. TO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600